

**Impact of anti-retroviral therapy on the sexual behavior of people living  
with HIV/AIDS in Addis Ababa, Ethiopia: a qualitative study**

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**Thesis submitted as part of the**

**Master of Philosophy Degree in International Community Health**

**May 2011**

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## Acknowledgments

First and foremost, I would like to thank God for all the opportunities and blessings he has been bestowing upon me.

I am grateful to our department (The Institute of General Practice and Community Medicine) for partially financing the cost of my field work. Line Løw, thank you for being helpful whenever I showed up at your office.

My deepest gratitude to my supervisor Arnfinn Helleve for his guidance and comments. I sure enjoyed working with you.

I would like to thank the people who made my research pleasant by contributing in any way they could. From the guards at the gates to the clerks and health workers at the three health centers I was working at. A special thank you to an ART data clerk named Tsegaye from Arada Health Center for being an outstanding person in accommodating his HIV clients by coming to work so early in the morning on Tuesdays so his clients won't be late for work. My research assistant Afomia Tesfayohannes, thank you for your thoughtful ideas and discussion as well as being a reliable person.

My parents and the nine other older siblings that I have, thank you for inspiring me to become a better person and I hope this step in my life makes you proud.

Last but not least, the two most important persons in my life, my wife Mekdes and my daughter Naomi, having you by my side is priceless. Mekdi, thank you for your invaluable comments as well as your thoughtful discussions.

## Abbreviations

AAHB	Addis Ababa Health Bureau
AIDS	Acquired immunodeficiency syndrome
ART	Anti-retroviral therapy
FGD	Focus Group Discussion
HIV	Human immunodeficiency virus
PLHA	People living with HIV/AIDS
PEPFAR	US President's Emergency Plan for AIDS Relief
MOH	Ministry of Health
MSM	Men who have sex with men
UNAIDS	United Nations Program on HIV/AIDS
US	United States
VCT	Voluntary counseling and testing
WHO	World Health Organization

## Abstract

**Background:** Despite its well known benefits, concerns over potential adverse impacts of human immunodeficiency virus (HIV) treatment on the sexual behavior of people living with HIV and those at risk of infection have recently been raised. It has been hypothesized that, among other things, beliefs about being non infectious while on treatment might lead to increased unsafe sex practices. Improvements in physical health and well-being due to treatment have also been cited as potential reasons for an increase in sexual practices among those affected by the illness.

The general objective of this study is to explore how anti-retroviral treatment influences the sexual behavior of patients with (HIV) receiving treatment in Addis Ababa, Ethiopia. The study also looks specifically into lay beliefs about transmission of HIV while on anti-retroviral treatment (ART). It explores the experiences of safe sex among these patients; and how being on ART impacted their sexual experiences. It also explores health professionals' views of how ART use influences HIV patients' sexual behavior.

**Methods:** A qualitative study using in-depth interviews with 28 patients and 10 health workers was conducted in the period between August and December 2010.

**Results:** The study found that participants had a high knowledge about the modes of transmission of HIV in general and the transmission of HIV while on ART, with few exceptions. Participants had no or limited experience with safe sex in the past. Most participants said that HIV treatment has not had any influence on their sexual drive. Few had either increased or decreased sexual desire. Most noted that they are currently abstaining from sex for several reasons including worries about adverse impact of sex on health when one is ill, the need to find a lifetime partner, and religious restrictions. Fear of discrimination made disclosure of HIV status difficult, including to intimate partners. No participant gave a history of increased sexual risk taking after initiation of ART. Health workers also noted that, although discussion of sexual matters with patients is extremely difficult in their set ups, many HIV patients receiving treatment give them a history of abstinence. They also said they did not experience an increase in reports of sexually transmitted diseases after the roll-out of the ART program.

**Conclusion:** There was no evidence from this study to suggest an increase in sexual risk taking after the initiation of ART in the study setting. There was a high level of knowledge among participants about HIV transmission including while on ART, which is encouraging but there was a low level of past safe sex practices. The latter should be addressed by health professionals. Difficulties addressing sexual matters with patients reported by health workers also necessitate immediate attention. Misperceptions about sex and health need to be addressed. Community level interventions to combat HIV related discrimination are needed.



# CHAPTER ONE: Introduction

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## *Literature review*

### **HIV globally**

A total of 33.4 million people live with human immunodeficiency virus (HIV) worldwide, and the epidemic remains a major global public health challenge (1). It was reported that 2.6 million people were newly infected in 2009 alone (2). HIV affects largely the economically productive age group. In the most affected countries, it has decreased life expectancy, worsened household poverty and hindered economic growth (3).

The major mode of transmission of HIV in Sub-Saharan Africa is unprotected heterosexual intercourse, and mother to child transmission. The greatest risk for HIV in this region is unprotected sex with multiple sexual partners. Other modes of transmission are more important in other regions. For example, in Asia, injecting drug users and men who have sex with men are among the groups with highest risk of infection (2).

There has been a continuing progress in terms of expansion of access to HIV testing, prevention, treatment and care in low- and middle-income countries. Some countries have managed to meet the target for universal access set by the United Nations Member States in 2006. There has been an increase in the number of facilities providing HIV testing and counseling services worldwide, with over two thirds of countries in Sub-Saharan Africa and the Caribbean introducing policies that support provider initiated testing and counseling by the end of 2009. An increase in HIV testing has also been noted, with a total of 67 million tested in 2009 alone. Nevertheless, recent national population based surveys indicate that the level of knowledge of HIV status among those infected is very low (less than 40%) (1).

## **ART globally**

A significant change has been observed in the global response to the HIV epidemic since the late 1990's. Cost, treatment complexity and perceived lack of capacity for program implementation made access to treatment of HIV difficult for those affected with the illness living in developing nations (4). Availability of anti-retroviral treatment (ART) nevertheless increased dramatically since the beginning of this century due to several initiatives, including World Health Organization's (WHO) "3 by 5" (3 million by 2005) initiative, the Joint UN Program on AIDS (UNAIDS), and the US President's Emergency Plan for AIDS Relief (PEPFAR). These programs allowed the scale up of ART programs in several low and middle income countries and increased access to free treatment in these set ups (5).

There was an estimated 5.25 million people receiving HIV treatment by the end of 2009 in low and middle income countries. This accounted for 36% of those in need being covered (3). The greatest increase in the absolute number of people receiving anti-retroviral therapy (ART) occurred in Sub-Saharan Africa, with a total of around 3.9 million people receiving ART in 2009 (1). The likelihood of marginalized populations and children to get treatment is lower than that of the general population (3).

When viewed across continents, the proportion of people eligible for treatment who were able to access it was 37% in Sub-Saharan Africa, 42% in Central and South America, 51% in Oceania, 48% in the Caribbean, 19% in Eastern Europe and Central Asia. Limited available evidence shows that the coverage is low among key populations at higher risk. According to data obtained from 99 countries, there was a 36% increase in the number of treatment facilities providing ART in 2009: an increase in the average number of people receiving treatment in each facility was also noted (3). But 10 million people infected with HIV and in need of treatment still remain in need (2).

A revised treatment guideline was issued by the WHO in 2010, and an earlier initiation of treatment was recommended, beginning from a CD4 level of < 350 cells/mm<sup>3</sup>. The number of people eligible for treatment was subsequently increased by about 50% (3).

After the advent of ART, death from AIDS-related causes has become less frequent. Figures show that around 14.4 million life years have been gained due to the provision of ART since 1996 (3).

Despite an increased access to ART in several set ups, several challenges still remain, and include: lack of knowledge about one's status, in particular in Sub-Saharan Africa, which limits treatment seeking. Costs, direct and indirect are also challenging, in particular for the very poor. Stigma and discrimination also limit people's access to treatment. Shortage of health personnel is also one of the challenges faced by ART systems in resource limited settings (5).

## **HIV in Ethiopia**

Ethiopia is one of the countries in Sub-Saharan Africa worst affected by the HIV epidemic (6). The national adult prevalence of HIV was estimated to be between 1.4% and 2.8% in 2009 (6). Particular sub-populations and geographic areas are worst affected, with significant urban-rural discrepancies (6, 7). In some urban areas such as Addis-Ababa, the prevalence was estimated to be 5% in the 2005 Ethiopia Health and Democratic Survey (8).

The major route of HIV transmission in Ethiopia is said to be heterosexual contact. Sex differentials are significant (6). Young women are more vulnerable to infection than young men: according to the Ethiopia Ministry of Health Single Point Estimates for 2010, women are 1.5 times as likely to be infected as men in urban areas (9).

A national HIV/AIDS policy was set in 1998 to combat the epidemic. Support and commitment in relation to HIV/AIDS has increased, with developments of specific HIV/AIDS related legislation, and increasing attempts to protect human rights. Involvement of civil society is also increasing. A comprehensive multi-sectoral national HIV/AIDS strategic plan is in place. Widespread communication campaigns using different channels of communication are also in place. Condom promotion and distribution has increased, although the ideal target is far from being reached (6).

The population groups believed to be at higher risk of HIV in Ethiopia based on available data are : sex workers, uniformed services, long-distance-truck-drivers; refugees and displaced people, daily laborers, mobile/migrant laborers, including cross-border population, street children, high school and university students, out-of-school youth and indigenous populations in remote foreign tourist destinations involved in transactional sex (6). Prevention efforts are mainly geared towards such high risk groups (10). Higher prevalence of HIV in these groups

was linked with high sexual partner change, concurrent sexual partnership, high exposure to sexually transmitted diseases (STDs), and low and inconsistent condom use (6). But there is a lack of information about the dynamics of sexual behaviors in the most at risk population groups and the general population, and further exploration has been called for (11).

Three types of HIV testing are conducted in Ethiopia. The first is client-initiated or voluntary counseling and testing (VCT), initiated by clients who wish to know their HIV status. The second is provider-initiated testing and counseling, recommended by health professionals during patient management in order to make specific clinical decisions which would be impossible without knowledge of the patient's HIV status, and which is also voluntary in nature. The third is mandatory HIV screening, conducted on voluntarily given blood and for organ transplantation or when ordered by the court (12).

## **ART in Ethiopia**

Initiation of ART services is one of the several measures taken by the government of Ethiopia to combat the epidemic at the national level. The fee-based ART initiative was launched in 2003, and the free ART initiative followed it in 2005 (13). ART services have gradually been decentralized and have been made available in both health centers and hospitals since August 2006 (14, 15). More regions have also gradually been covered (16).

A total of around 179,000 patients were receiving ART in 2010, and there were a total of 532 operational ART sites in 2010 (17). Studies based on self-reported measures of adherence show high rates of adherence to ART (18, 19).

With the decentralization of services, there has been a significant improvement in the proportion of people outside Addis- Ababa who have access to ART. The proportion of women and children, out of the total number of patients who received ART, increased significantly and reached 55% in 2008. There was also a considerable increase in the number of clients receiving HIV counseling and testing services with more than 4.5 million having received the service by 2008 (14).

In 2008, Ethiopia's national HIV treatment guidelines were made available. In this document, approach to the management of adults, adolescents and pregnant women is presented. For

adults, the treatment criteria include CD4 counts below 200 or WHO clinical stage III or IV of the disease. Treatment criteria for infants and children include WHO pediatric clinical stage III or IV disease and age-related CD4 percentages. The first line regimens ART for adults, adolescents and children are based on the combination of three of these drugs: Zidovudine or Lamivudine, Stavudine, Efavirenz or Nevirapine. Second line treatment using Lopinavir/Ritonavir, Didanosine and Abacavir is also recommended in the event of failure of the first line treatment (20).

## **Transmission of HIV while on ART**

ART decreases the HIV viral load in plasma and in genital secretions in individuals infected with the virus. As viral load is the main risk factor for all modes of transmission of HIV, ART will thus decrease the transmission of HIV. These effects can nevertheless be offset by increase in risky sexual behavior (21, 22).

Studies have indicated that indeed the risk of transmission of HIV is decreased with treatment. A study from Italy showed that heterosexual transmission of HIV was reduced, but not eliminated by ART treatment in a study of a cohort of HIV infected males with HIV negative female partners (23). A meta-analysis conducted in 2009 showed that the risk of transmission was negligible when high viral suppression had been achieved but the authors stressed the importance of more studies to assess the risk of transmission from infected individuals on treatment (22).

## **ART and sexual behavior**

The several benefits of ART to the well-being of people living with HIV/AIDS (PLHA) have long been acknowledged; and a considerable decrease in the incidence of acquired immunodeficiency syndrome (AIDS) and AIDS-related mortality has been noted in countries where access to ART has been expanded (2, 24-27). The past decades have seen increased efforts in expanding access to ART in all corners of the world and more patients are on ART today than ever before (2). Organizations such as WHO have noted other benefits of ART than the medical benefits to the individual patient. These include the reduction of HIV associated stigma and increased VCT uptake.

However, concerns have also been raised about ART's adverse impact on sexual behavior (24, 25, 28). Different mechanisms have been proposed as to how this might occur:

- ART is known to result in improvements in physical health and well being, which might be followed by an increase in sexual desire and sexual activity, including unsafe sex.
- In addition, with improvement in health and increase in life expectancy with treatment, beliefs about HIV being a chronic manageable illness will grow, potentially resulting in increased unsafe sexual practices.
- Similarly, beliefs among those receiving treatment that they are no longer infectious (ART can lead to low or undetectable viral load) can lead to these individuals opting for unsafe sexual practices.
- People may also find it difficult to sustain safer sexual practices over long periods, a phenomenon referred to as "safer sex burnout" (25, 28). These issues have been referred to as treatment optimism or behavioral disinhibition (25, 28)

In the following sections, relevant articles on the issue of ART and sexual behavior will be discussed. A summary of findings as well as gaps identified in the literature will be presented at the end.

There are few studies looking at the subject of the impact of ART on sexual behavior in developing country settings. Most studies identified were conducted in Western countries, and most on men who have sex with men. These studies are included in this review because they provide some insight into the subject matter, although they address a different group of HIV infected people in a different context, and the results might not largely apply to the Ethiopian context, since many dimensions of the issue to be explored, in particular sexual behavior, are context specific. Studies conducted in developing country contexts will first be presented followed by studies from Western settings.

## **1. Evidence from developing countries**

A review was conducted in 2007 to assess the strength of evidence for the impact of ART on sexual behavioral outcomes of HIV positive individuals in developing countries (25). Three studies were included. Two of these studies were from Uganda (29, 30), and one was from Cote d'Ivoire (31). In all studies, there was a high rate of abstinence, which was not associated with ART. Frequency of sexual intercourse was similarly not found to be affected by ART status. Condom use was significantly higher among ART patients compared to patients not taking ART in two studies (29, 31). In the third study, condom use similarly increased significantly from baseline to follow-up among patients (30). One of the studies found that ART patients were more likely to have had the last sexual encounter with a main partner as compared to the non-ART patients (31). Another study found no difference in number of sexual partners between those on ART versus those not on ART (29). The third study also showed that six months after ART initiation, the number of unprotected sex acts with a partner of known negative or unknown HIV status declined by 70% (30). An inconsistent finding was that one study found that ART patients were twice as likely to report STDs as compared to non ART patients in the past six months (29). It was also indicated that the risk reduction noted was probably due to counseling at the treatment facilities and not associated to the ART per se. The review indicated that, despite high speculations about the phenomenon of treatment optimism, there is a lack of studies exploring this issue and called for more studies looking at HIV treatment and risky sexual behavior (25).

A prospective cohort study consisting of adult HIV patients was conducted in Mombasa, Kenya, to compare unsafe sexual behavior before starting ART and 12 months after. 48% of the participants were found to be sexually active in the year preceding initiation of ART. 77% of these reported having unprotected sex with any partners in the 12 months preceding ART. There was a decrease in unsafe sex with people who are HIV negative or have unknown status, from 50% in the 12 months preceding ART to 28% in the subsequent 12 months. The study thus showed no evidence of increased risky sexual behaviors among patients who received ART for 12 months. There was a significant decrease in unprotected sex with HIV negative or unknown status persons, condom use at last sex act, number of sexual partners, or

reported STD. The patients were nevertheless only followed for one year, so it was difficult to predict long term behavioral change (28).

A quantitative study conducted in Cote d'Ivoire to assess whether ART is associated with sexual risk taking. Both patients receiving ART and those not receiving ART were included in the study. The proportion of patients with unprotected sex was higher among those who did not receive ART when assessed at the beginning of the study. After 6 months of ART initiation, it was found the two groups (those on ART and those not on ART) had similar proportions of unprotected sex. This showed that there was an increase in unprotected sex among those receiving ART. Younger age, alcohol consumption and clinical stage of disease (patients in stage A or less advanced infection reported higher unsafe sex than patients in stage C or advanced disease) were also associated with unsafe sex. (32).

## **2. Evidence from developed countries**

A meta-analytic review was conducted in 2004 to assess whether 1) treatment with ART, 2) having an undetectable viral load, or 3) holding specific beliefs about ART and viral load are associated with increased likelihood of unprotected sex. The studies included HIV positive, HIV negative and unknown serostatus individuals. There was no difference in the likelihood of engaging in unprotected sex among HIV patients receiving ART versus those who did not. Four of the studies showed that there was a reduced likelihood of unprotected sex among those receiving ART. Having an undetectable viral load was not found to be associated with a higher likelihood of having unprotected sex; but two studies had different findings to this. One showed that the group with an undetectable viral load was more likely to have had unprotected sex and the other showed the opposite finding. There was a significantly higher likelihood that people who believed ART reduces transmission of HIV or who were less concerned about practicing unsafe sex given the availability of ART would engage in unprotected sex (33). All of the studies in this review were from developed countries and more than half of the studies were conducted among men who have sex with men or have samples composed mainly of MSM.

Other studies on the other hand found that the introduction of ART is followed by increases in risky sexual behavior. A study among HIV positive women on ART in the United States (US) showed that the risk for unprotected sex was higher after ART initiation than before ART initiation in all women (34). A study among homosexual men in the US showed that a



decreased concern about infecting someone, because of the availability of treatment, was associated with a three to six fold increase in the odds of having unprotected anal sex among HIV positive men (35). Another study among gay and bisexual men in the US found a strong association between increased high risk sexual behavior and beliefs that ART can reduce transmission of HIV (36). Another study in the US looking at the incidence of HIV after the introduction of ART among men who have sex with men found a significant increase in unprotected anal intercourse and in multiple sexual partnerships (37). In a study conducted in the Netherlands, levels of unprotected sex with casual partners were found to increase when immunological (decreased CD4 count) and virological (undetectable HIV RNA) improvements were achieved, among homosexual men (38).

Available evidence thus shows mixed results with regards to changes in sexual behavior associated with ART use among people infected with HIV. While some studies report no change in sexual behavior associated with ART use (in particular in developing country settings), others indicate that sexual risk taking does increase with the use of ART. The differences between findings might relate, among other things, to different beliefs regarding HIV and ART as well as potentially different exposures to education and information related to sexual behavior in the treatment centers where patients receive their treatment. Most of the studies identified made use of a quantitative approach and tried to quantify changes in sexual behavior. In depth exploration of reasons for changes in either direction was lacking in most studies.

It is also worth noting that exploring sexual behavior is a complex matter, and particularly because studies rely on self reported assessment of sexual behavior. Contextual factors such as cultural norms are also likely to influence the response given by participants.

### ***Justification for the study***

Introduction of ART has brought hope for those infected with HIV, but also for communities at large. But concerns have been voiced as to whether advances in the treatment of HIV may be followed by new public health challenges, such as an increase in risky sexual behavior.

This change in sexual behavior can be seen among people at risk of being infected; but also among patients with HIV already on treatment, influenced, among other things, by beliefs about transmission once treatment for HIV is started. Perceptions about HIV as a “death

sentence” have also changed since the introduction of ART and might influence sexual behaviors. Improvements in physical health and well-being might also be followed by an increase in sexual desire and sexual activity, including unsafe sex. For those experiencing long periods of safe sex, “safer sex burnout” might also lead to risky sexual behavior.

To our knowledge, no study in Ethiopia has explored whether there is a change in the sexual behavior of patients after they are initiated on ART. Lay beliefs about the impact of ART on transmission of HIV also remain unknown. Ethiopia is one of the countries highly affected by HIV and a rapid scale up of ART has been occurring in the country. Knowledge of these factors is important for public health initiatives of HIV prevention.

## ***Objectives of the study***

### **Major objective**

The major aim of the present study is to explore how ART influences the sexual behavior of people living with HIV receiving treatment in Addis Ababa, Ethiopia.

### **Specific objectives**

- To explore lay beliefs about transmission of HIV while on ART among people living with HIV (PLHA) receiving ART
- To explore experiences with safe sex among these PLHA
- To explore the impact of ART on the sexual experience of these PLHA
- To explore how the sexual behavior of these patients was influenced by the initiation of ART
- To explore health professionals’ experiences of how ART use influences HIV patients’ sexual behavior

## ***Research question***

How does initiation of ART influence beliefs and practices of sexual behavior among HIV patients receiving ART?

## CHAPTER 2: Methodology

### *Study setting*

#### Country profile of Ethiopia



Figure 1: Map of Ethiopia

## **Geography**

Ethiopia is located in the Eastern part of Africa. It is bordered by Djibouti, Eritrea, Sudan, Kenya and Somalia. It lies between 3 and 15 degrees north latitude and 33 and 48 degrees east longitude. The total area of the country is 1.1 million square kilometers and the average population density is 73.1 per square kilometer (39).

Ethiopia has a great geographical diversity with wide ranging topographic features, from an altitude of 4 550 meters above sea level at Ras Dashed to 110 meters below sea level at the Afar Depression. There is also climatic diversity, temperatures ranging from 10 degree Celsius in some areas up to 47 degree Celsius in others (40).

The country's physical conditions and the variations in altitude have resulted in great diversity of terrain, climate, soil, fauna and flora. Three main climatic groups exist in Ethiopia: namely the tropical rainy, dry, and warm temperate climates. The mean maximum and minimum temperatures vary spatially and temporally. Highest mean temperatures are recorded from March to May and lowest temperatures between November and December (40).

## **History**

Ethiopia is an ancient country, identified as one of the cradles of mankind by paleontologists. Lucy, one of the earliest most complete hominoids, was discovered in Ethiopia and is believed to date back to 3.5 million years. Ethiopia also has its own alphabet which is over 3000 years old (40).

Ethiopia is one of the two countries in Africa who have always maintained their independence. The country was led by successive emperors and kings until 1974. In 1974, a military government came into power, overthrowing the Emperor Haile Selassie and ruled the country until 1991(40).

A federal system of government was established after the fall of the military regime in 1991. The government is made up of two tiers of parliament, the House of Peoples' Representatives and the House of the Federation (40).

## **Population**

The population of Ethiopia was estimated to be around 80 million in 2008 (39). Ethiopia is one of the least urbanized countries in the world (40), with only 17% of the population living in urban settings (41). An estimated 51% of the population is in the age group between 15 and 64; 46.3% of the population is in the age group of 0-14 years. The population growth rate is estimated to be 3.2% (41).

Ethiopia has a rich diversity of peoples and cultures. The country is located at the cross roads between Middle East and Africa. Throughout the years, the country has become a melting pot of diverse customs and diverse cultures. There are many ethnic groups in the country: Oromo 34.5%, Amara 26.9%, Somalie 6.2%, Tigraway 6.1%, Sidama 4%, Guragie 2.5%, Welaita 2.3%, Hadiya 1.7%, Affar 1.7%, Gamo 1.5%, Gedeo 1.3%, other 11.3% (41).

The majority of the population resides in the highland areas of the country. Whereas the main occupation of the settled population is farming, the population in the lowland areas is mostly pastoral (40).

The main religions are Christianity and Islam (40, 41). The literacy rate is 42.7% (males 50.3%, females 35.1%) (41).

Amharic is the official language. However, there are over 80 different languages spoken in the country: 12 Semitic, 22 Cushitic, 18 Omotic and 18 Nilo-Saharan (40).

## ***Economy***

Ethiopia is one of the least developed countries in the world (40). Its economy is based on agriculture, which accounts for around 45% of GDP, and 85% of total employment (41). The gross national income per capita was estimated to be 319 dollars in 2008 (39).

Coffee is vital to Ethiopian economy and is the main export of the country (40, 41).

Nevertheless, due to lowering coffee prices, production of khat by farmers has increased, in order to supplement income (41).

The Ethiopian currency is the Birr, and at present, 1 US dollar is equivalent to about 17 Birr. There was a central command type of economy during the socialist Derg regime. A market-oriented economy has been in place since the overthrow of that regime (40).

An estimated 38.7% of the population lived below the poverty line in 2006. The GDP growth rate in 2010 was estimated to be 7% (41).

## **Health profile**

There is a high burden of disease in Ethiopia, with a high prevalence of communicable diseases and nutritional deficiencies (42).

According to the Ministry of Health data on health and health related indicators for 2007, the infant mortality rate was 77/1000 live births, the maternal mortality rate was 766/100,000 live births, life expectancy at birth was 50 for females and 48 for males, neonatal mortality rate was 41/1000 live births, and the under 5 mortality rate was 123/1000 live births. The total fertility rate was 5.4 children per women in life during her reproductive ages, the percentage of children under the age of 5 who are underweight was 35, anti-natal care was 52.1%, the expanded program for immunization coverage was 72.6%, the contraceptive prevalence was 15%, and attended deliveries stood at 16.4%. The primary health service coverage is estimated to be 86% (42).

Ethiopia's high population growth adversely impacts the overall health situation. The country has a young population accounting for a third of the total population. Therefore, reproductive health problems are prevalent. The main reproductive health problems are: gender inequality, early marriage, female genital mutilation, unwanted pregnancy, closely spaced pregnancy, unsafe abortion, and STDs including HIV/AIDS, with an estimated 1.1 million people living with the virus in the country (6, 43).

The health service is characterized by a shortage of health workers. For example, the physician to population ratio in 2007 was 1/42,706 and the nurse to population ratio was estimated to be 1/4,207 (42).

A 20 year rolling Health Sector Development Program has been developed by the Ethiopian government which has a series of five-year phases. Currently, phase IV is underway (42).

## ***Addis-Ababa, profile***

Addis Ababa is the capital city of Ethiopia. It is the biggest urban center in the country, accounting for one third of the urban population of the country (44).

There is a 100% health service coverage with regards to geographical accessibility. Several hospitals, both governmental (5 owned by the regional health bureau, 5 owned by the federal ministry of health and 3 owned by defense and police) and private provide services for inhabitants of the city. In addition, several clinics, health centers, health posts, retail drug outlets exist in the city. There are also over 40 NGOs in Addis-Ababa working on health and health related issues (45)

With regards to health indicators, a 2007 report from Addis Ababa Health Bureau shows an infant mortality rate of 61/1000 live births, a maternal mortality rate of 566/100,000 live births, a total fertility rate of 2.24 children per woman in reproductive years, a life expectancy at birth of 64 and 60 for females and males respectively, an ANC coverage of 80.4%, and a contraceptive prevalence rate of 37.8%. A high rate of infectious illnesses and nutritional diseases has been reported in the city. HIV/AIDS, TB, nutritional problems and accidents play a prominent role in morbidity and mortality (45).

## ***Specific study setting***

Three health centers in Addis-Ababa were selected to collect data for the study: Bole Health Center, Kazanchis Health Center and Arada Health Center. A total of 21 health centers exist in Addis- Ababa under the administration of the Addis Ababa Health Bureau, and provide free ART services for residents of the city. These 21 health centers are located in different parts of the city in order to provide full health service coverage for the city. The different health centers provide similar services and they are also similar in terms of available health personnel. For this study, three health centers located in different parts of the city were selected in order to get representativeness with regards to the city's diversity.

ART provision in Addis- Ababa was initially started in Hospitals and decentralized to these health services in 2006. These health services are now the major providers of ART for the population in Addis-Ababa. They also provide general medical services, as well as chronic care for HIV patients. By the end of February 2011, Arada Health Center had a total of 1853,

Bole Health Center had 2750 and Kazanchis had 1355 enrolled HIV patients in their respective ART clinics (17).

### ***Study design***

A qualitative research approach was adopted. In-depth interviews were conducted with purposefully selected patients and health professionals. In-depth interview is a form of qualitative interview. The qualitative interview is the most common and one of the most important data collection methods in qualitative research (46). The interview is described as a conversation that has a structure and a purpose (47). It has an ability to capture different views of the same matter (48).

In-depth interviews are also particularly suitable for the exploration of sensitive matters and complex phenomena (48). They were thus found to be most appropriate in this study because of the sensitivity of the matter to be explored and its complex dimensions. The possibility of conducting focus group discussions (FGD) in order to validate our results from qualitative studies was initially contemplated. But the idea was eventually abandoned after a thorough contemplation of the cons associated with discussing sexuality in a group setting, in particular in an Ethiopian context where this issue is seldom discussed among people. It would be extremely difficult to conduct a group discussion involving sexuality and have people discuss the topic freely and provide genuine accounts of their experiences. Instead, it was decided that repeat interviews would be conducted with patients if issues unclear during the interview arose later during data analysis, in order to get clarification.

A qualitative approach was chosen over a quantitative approach in this study for two reasons: as mentioned above, qualitative interviews, in particular in-depth interviews which allow us to ask open-ended questions, are suitable for a detailed exploration of the phenomena in question. In addition, the issue being explored in this study has not been previously explored in Ethiopia (to our knowledge), and thus, through this approach, we were able to generate new information without confining the results to specific choices within pre-defined multiple questions (as would have been the case with a quantitative approach). The findings of this study can then be used to formulate questions for future quantitative studies which might yield more generalizable results.



## ***Study participants***

A total of twenty eight patients and ten health professionals were included in the study. Ten patients were recruited from Bole Health Center, eight from Kazanchis Health Center and ten from Arada Health Center. Similarly, three health workers were included from Bole Health Center, three from Kazanchis Health Center and four from Arada Health Center.

Patients were asked to participate in the study if they were:

- Between 18 years and 45 years
- On ART treatment, for at least 6 months
- Not married

Patients who were unwilling to participate and who were not mentally fit were not invited to take part in the study.

All health workers in the ART clinics involved in the management of patients were eligible for inclusion in the study.

## ***Selection of participants***

Purposeful sampling was done to recruit participants for the study. In qualitative studies, the researcher should aim at enhancing and saturating theoretical sensitivity through strategic sampling (49). Attempts were thus made to include patients with diversity with regards to different socio-economic factors, in order to capture a diversity of views.

Patients from both sexes and from different age groups were included. Diversity with regards to level of education, employment status and relationship status was also ensured.

These patients were contacted through health workers at the health centers. Contact was kept with these health workers throughout the study in order to inform them about the patients interviewed and in order to ask them to recruit patients with characteristics not already included. The characteristics of the patients included in the interviews are presented in the table 1.

Health professionals with different backgrounds (seven ART nurses, two health officers, one expert patient) were also selected for the study. All health workers recruited for the study had worked in the ART clinics for at least two years.

Table 1. Characteristics of participants

Characteristics		Number
Gender	Male	13
	Female	15
Age	20-30	10
	31-39	11
	40-48	7
Education	Illiterate	2
	Primary education	9
	Secondary education	12
	Higher education	5
Occupation	Student	2
	Employed	22
	Unemployed	4
Relationship status	Single	15
	Separated	3
	Divorced	3
	Widowed	7
Duration of treatment	6 month-1 year	4
	1-2 years	10
	2-4 years	8
	> 4 years	6

### ***Data collection***

Application for ethical clearance was made at the Addis- Ababa Health Bureau. After approval was obtained from the Health Bureau, medical directors of the selected health centers were contacted and their approval sought to work in the respective health centers. Health workers in the ART clinics were subsequently contacted, and the aim of the study was explained to them. They were then asked to recruit patients with the pre-defined

characteristics mentioned above and they were given the letter of invitation they should give to patients. They were informed that participation by the patients should be strictly voluntary. They were also asked to appoint patients for interviews at their time of convenience.

The voluntary nature of the interviews was further stressed when patients came for the interviews. They were again informed that declining to participate will not influence their treatment at the health centers in any way. They were told that confidentiality and anonymity will be ensured.

Health workers were approached directly and their consent for participation was sought. All health workers who were asked to participate in the study agreed to participate, except an expert patient who declined to participate. Health workers were told that anonymity and confidentiality will be ensured.

The interview guide for patients was pre-tested on three patients. It was subsequently slightly modified. The interview guide was semi-structured with open-ended questions. The interview guide was developed after thorough review of the literature. The interview guide was not strictly followed throughout all interviews, because new topics that were raised in interviews were subsequently discussed with new participants, and issues that were already repeatedly discussed in completed interviews were given less emphasis in later interviews.

The topics covered in the initial interview guide for patients included: when and how the participant found about their HIV status, their life experiences after their diagnosis, their openness about their HIV status, their knowledge about HIV transmission, their experience with others who know about their HIV status, their relationship status and their sexual experience, the impact of HIV and ART on their health status in general and on their sexuality in particular, their beliefs about the transmission of HIV while on ART, their knowledge and practice with regards to safe sex etc.

Health workers were asked about how their patients respond to ART treatment in general, their beliefs as to the openness of their patients with regards to their HIV status, changes they observed on their patients after ART initiation, reports from patients about other sexually transmitted illnesses, the experiences of their patient after ART initiation, their experiences

regarding changes in sexual behavior of patients after ART initiation, whether sexual behavior is something they discuss with their patients, the education they give to patients about HIV transmission, sources of social and psychological support for their patients etc.

Participants were interviewed in the health centers at the time of their convenience. Only the participant and the researcher (and assistant with female participants) were present in the room where the interview was conducted. The research assistant in the study was a 24 year old female university graduate in psychology). The health workers were interviewed in their offices.

On average, the interviews lasted between 40 and 50 minutes. The interviews were audio-recorded. One patient had declined to be recorded but eventually said that he would not mind to be recorded, few minutes after the interview had begun.

## ***Analysis***

Audio-recorded interviews with patients and health professionals were transcribed verbatim and translated into English by the researcher.

Manual coding of the transcriptions was made. Material about participants' beliefs about the impact of HIV on sexual life, impact of ART on sexual life, beliefs about HIV transmission while on ART, attitudes towards safe sex and sexual behavior after ART initiation were identified and coded according to Giorgi's phenomenological analysis, modified by Malterud. Four steps of analysis are suggested by Malterud (49):

1. Identification of themes for coding by initial overview of the material. Consistent and relevant codes may be identified through further work.
2. Identification of points within the text with information about themes covered by the codes
3. Text elements with same code are then combined and summarized, and their common meaning is expressed as concepts
4. Categories representing the meaning of all similarly coded elements are then created

After transcription and translation were completed, the data was read in its entirety twice. Then themes for coding were identified. Then, going through the entire material again, segments of text containing information fitting within the identified codes were highlighted

and notes were attached to each of these. In a next step, the content of identified material relating to the same codes was summarized. In some cases, broader categories were made from codes with similar themes.

## ***Reflexivity***

The term reflexive means to “bend back upon oneself”. In research, reflexivity is: “the thoughtful, self-aware analysis of the intersubjective dynamics between the researcher and the researched.” It necessitates that critical self reflection is made to show how the researcher’s social background, assumptions, positioning and behavior influence the research (50).

When I first thought of the subject I wanted to explore, it was with an understanding that the task ahead will be challenging considering the fact how hesitant people are to open up about their sexuality. In addition to that, I realize that I would also be dealing with a segment of the population which has been stigmatized and discriminated against for being infected. It is a commonly agreed upon perception by many in Ethiopia that those who have been infected have a promiscuous lifestyle. Exploring how HIV treatment affected the sexual behavior of the people living with the HIV would entail a great deal of caution in terms of how I conducted the interview sessions. I wanted to assure my subjects the information they give me would be treated with the utmost confidentiality. The first thing I would tell them was that I needed them to stay anonymous by not mentioning their names to me. I would even mention the fact that I came from abroad to do this research and that I would be going back after finishing up the data collection process. Maybe, for those who have agreed to participate this would not have made any difference, or maybe it would, but going in I wanted to make sure that I eliminated (to the extent I could) the factors that I thought would hinder the participants’ willingness to share their thoughts and feelings freely.

Being a native of Addis Ababa, I felt like I had an edge in understanding the participants’ feelings and in contextualizing it, but in some of the cases I found my participants’ realities far beyond my imagination. For example, a lady who came unexpectedly to the office I was given (using) at the Bole Health Center escorted by an expert patient (expert patients are HIV positive patients who are given a short term training to work at the health centers. They help

the health professionals at these clinics in giving health education, adherence counseling, drug refills etc), will always remain in my head in how emotional the interview went for both of us. For a lady who is in her thirties, she looked older, thin, and very frail. A mother of three with no means to support her kids except for begging on the streets and selling roasted barley/wheat known locally as “kolo” in slum bars. I stood up to greet her and invited her to sit. The office I was using belonged to one of the nurses but it was also being used as storage for some of the equipments that needed to be dispensed to patients who needed to treat the water they were drinking, hence relatively larger in size. I could tell from her appearance that she was faced with financial challenges, but sitting next to her and smelling the odor emanating from her body and clothes, listening to her horrendous stories of life and the diseases she was battling affected me in ways that could have affected the objectivity I wanted to have in dealing with my informants. I’m not quite sure if it was the tears that I was holding back or maybe the look on my face that exacerbated her emotions to the point where I had to tell her that I would stop the interview if it was causing her pain. She stopped crying and tried her best to give me answers to my questions. Her story was so sad and touching beyond I have ever experienced and I ended up doing what I was planning not to, which was to give financial help. Because of the lack of adequate funding for my research, one of the areas that I had to cut was incentives to participants. In this lady’s case, I justified my doing to myself as well as to her by acknowledging how she normally earn her living(begging) by delicately wording the reason for me giving her a small amount of money that she could use for food. After we parted each other, I could not believe what I just heard (experienced) during the interview. I have met my share of people who are struggling very hard to make it in Addis Ababa, but hers was by far the gravest. Later on that night as I went to bed, I couldn’t forget about her and that’s when I realized that it has affected me to the point where I started to remember how she suddenly appeared at my doorsteps and who brought her to me....whether there was a hidden motive(for some type of benefit) because almost always it was the nurses/health officers who performed the recruiting for me but this time it was one of the expert patients who worked in the ART clinic and who had a closer contact with the patients. When she brought her to the office, was she hoping that I might be able to provide some type of financial support? I started to analyze the issue by trying to answer the many questions that were coming to my head but only to conclude that maybe I was overanalyzing and that I needed to preserve this new reality in helping me to have a new understanding about the participants and move on with the research at hand.

What the west considers as “overweight” or “slightly overweight” in a person’s size is contrarily looked up on as a sign of good life and financial stability by many in Ethiopia and especially among those who are at the bottom of the socio-economic status. Many of my participants (from the patients side) represent the poorest of the poor. Many of them tend to consider themselves as inferior to others because of their unfortunate life predicament. I am 180cms tall and weigh a 116kgs, which is very big by the Ethiopian standard; and when my participants sat with me for the interviews, with a significant portion of them I noticed some level of intimidation which made me decide on adjusting certain things I thought could help ease the feeling of inferiority (being intimidated) and make them a bit more comfortable. I adopted a different look than my usual self which included growing facial hair and dressing down. I was aware that it is common for many people in Ethiopia to tend to judge others based on looks and attires, but when I found myself being conscious of matters outside of the core of my research affecting how I conducted my research.

As I mentioned at the top of the section, sexuality and discussing sexuality outside of trusted friends or family members is a taboo nature in Ethiopian context. It is a challenging task to get people to talk about their sexual experiences. As a male researcher, I found it even more challenging when it came to discussing sexual behaviors with the female participants. After the first interview with a female participant, I decided to have a female research assistant to help me with interviewing the female participants. She would ask the questions and I would only interject when I needed to probe the questions.

When the health workers were recruiting the participants, they were introducing me as a health worker who was doing a research to assess the impact of ART on the sexual behavior of people living with the virus. In two of the interviews the participants thought that I was a doctor even though I briefed them about who I was before the interviews. And in Ethiopia, patients usually respect healthcare providers especially doctors and nurses very well and some are even fearful of them. In the health centers I was working at, where the vast majority of patients represent low income families, I don’t want to neglect the notion that my participants willingness to talk about their sexual habits (which as I mentioned was a difficult topic in Ethiopian culture) could arise from their readiness to satisfy those who are in the business of keeping them well.

Another area which I thought may have affected the outcome of my research is the fact that I may have been perceived as an “outsider” because I am a middle class and educated man, something which participants might find difficult to identify with. Establishing and attaining some level of comfort with the participants is pertinent on a topic like this because the information gathered would not be contrived. Although I made a conscious effort to correct the gap in perceiving me in a certain manner, it is worth noting that my level of education may have an adverse impact in attaining the level of trust that is needed to perform a research of this type with meaningful results.

And finally, I was also grappling with myself in not letting my pre-understanding affect the research process by frequently asking myself whether I had been influenced by my pre-understanding or the actual facts in the field. I would like to acknowledge that there might be instances/areas where my pre-understanding and the facts on the ground would/could overlap.

### ***Communication of results***

The results of the study will be presented at the Institute of Health and Society, University of Oslo. The final copy of the thesis will be provided to the respective health centers. A scientific paper will be written and submitted to a journal.

### ***Ethical considerations***

Prior to the conduct of the study, ethical approval was sought from the respective ethical committees in Ethiopia and in Norway. During data collection, a letter of invitation was presented to all participants, which explains, among other things, the purpose of the study, as well as the fact that participation is voluntary and which also explains that refusal to participate will have no repercussions. In all cases, participants’ written consent for participation was sought. When faced with participants who cannot read, the letter of consent was read aloud and the participants signed the letter of consent.

Patient participants were approached through health workers at the selected health centers. The health workers presented these patients with the letter of invitation on my behalf and set a time for interview at their convenience. It was stressed to the health workers that they should inform to the patients that participation is voluntary.



The CIOMS guideline (guideline 13) indicates that poor individuals and individuals who have serious illness are considered as vulnerable individuals (51). Therefore, I made sure to exclude participants who were too ill to participate in the study.

All data gathered were viewed and reviewed only by researchers involved in the project, and kept in a secure manner. Confidentiality and anonymity were ensured. Only participants who are 18 years and older and who are willing to participate were included in the study.

No incentives were provided to the patients due to unavailability of resources but the interviews were conducted at the time of convenience of the participants, in order to avoid any loss of income associated with participating in the interview.

### ***Ethical approval***

The study was approved by the Regional Committees for Medical Research Ethics (REK) in Norway and by the Ethical Clearance Committee of the Addis-Ababa Health Bureau.

## CHAPTER THREE: Results

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In the following sections, the results of the interviews are presented. The results from the patients' interviews will first be presented followed by results from health worker interviews. The major themes that were identified are presented. Quotes from participants are used to illustrate findings and to let the reader hear the story from the participants' own voices. At the end of the section, case studies will be presented to let the reader get different perspectives of the matter being explored. The cases were chosen in the belief that they reflect different views and experiences of sexual behavior among participants receiving ART.

Results from in-depth interviews with 15 female and 13 male HIV positive individuals receiving ART for at least the past six months prior to the interviews are presented in this below. A purposive maximum variation sampling strategy was adopted and thus the participants are diverse with regards to different socio-demographic factors. All participants said that they had sexual relations with persons of the opposite sex, except for one male participant who said that he had sexual contacts with both males and females.

### ***Lay beliefs about modes of HIV transmission***

Participants were asked to list the possible modes of transmission of HIV. A majority of participants replied that HIV could be transmitted sexually and also through blood contaminated objects. A 30 year old female participant explained:

*“HIV is transmitted through sexual intercourse, by using sharp things and infected things”.*

Only one participant, a 42 year old male, reported a different route of transmission, stating that HIV could be transmitted through the consumption of contaminated food:

***Participant:*** *They said my blood is dirty. I said why is it dirty? They said they have to take blood again, and then they told me I have HIV. Then I started thinking. I don't go to people for intercourse. There is no one in the neighborhood that has this, I can't say he gave it to me through blood for revenge, or I can't say he gave it to me through food.*

**Researcher:** *So you believe HIV can be transmitted through contaminated food?*

**Participant:** *Yes.*

One participant, a 24 year old female, who mentioned that HIV is transmitted sexually and through blood, also explained that in her case, she got infected while washing the hair of a person who had open wounds on her scalp while working at a hair salon.

No participant in the study mentioned about mother-to-child transmission of HIV, unless probed about it.

Findings thus show that participants have a good knowledge about modes of transmission of HIV. As a native of Addis Ababa, I have heard etiologies of diseases described as being outside of the biomedical sphere (for example, supernatural powers), and it was interesting to hear that those reasons were not used as a reason for HIV infection.

### ***Disclosure of HIV status***

Most participants stated that they disclosed their HIV status only to few trusted family members or friends. When asked about the reason for non-disclosure, all participants replied that it is for fear of being discriminated against. A 27 year old female participant said:

*“I have only told to my friend. My families don’t know. What am I going to tell them? They will say I have been here and there.”*

A 31 year old male participant similarly said that he would not disclose his status to anyone, and said that he believes no one would suspect him of being infected.

*“You know it’s very hard to tell this to anyone. Since I feel ok, why? Why get myself in trouble? You won’t believe this, but I am known in my neighborhood for using condoms all the time. Even some people joke about me saying that if they don’t have condoms to use, they can always find it in my house.”*

The non-disclosure of HIV status for this participant extended to his steady girlfriend, as was also the case with few of the other participants who had not disclosed their status to their intimate partners. This participant said that his girlfriend is unaware of his HIV status and that he justified the need to use condoms to her as a means of preventing unwanted pregnancy.

*“I say we can’t have children now, we have to be careful. We always use condoms.”*

Another participant, a 34 year old male, similarly didn’t tell about his HIV status to his girlfriend with whom he has a steady relationship and said he is intending to do so in a short while, since he believed he recognizes some symptoms of the illness on her, and does not want her to die without getting any help.

*“I have been thinking about telling her. Because I see some of the things that happened to me on her. I don’t know how to tell her because she likes going to church and using holy water when she gets sick. When I say to her, go and see a doctor, she doesn’t like that. I don’t want her to die on me. I will tell her about me before it becomes too late.”*

A 37 year old male participant, who refused to be recorded, iterated the fact that disclosing one’s status will definitely lead to that person being suspected of promiscuity and hence said that he would not risk being recognized by being recorded:

*“Sorry, but I don’t want to be recorded. You know what it is to be known. Our society is not accepting this. I don’t want to risk anything. Yes I’m educated and I have a job but that doesn’t give me any protection. I was in a long relationship with someone but who is going to believe that I was faithful to her?”*

These findings indicate the high level of perceived discrimination that patients experience. This resulted in many of the participants deciding to be extremely selective about who they disclose their status to.

### ***Sex and its perceived adverse impacts on health***

A finding in the study was a belief among participants that sexual activity might adversely impact their health status. Few participants expressed a belief that being sexually active will have negative impacts on their health and thus decided to abstain from it. Some considered sexual intercourse as a laborious activity that could make them lose energy

A 20 year old female participant explained:

***Participant:*** *No, I don’t want to do it. Even my health just returned now. I feel like if I do it, I am going to get sick again.*

**Researcher:** *Why do you think you will get sick again?*

**Participant:** *I am weak. I will get sick again.*

A 39 year old male participant similarly said:

*“I don’t do it (sex). Because I don’t want to harm myself. It will harm me. I am not a healthy person. I don’t want to do it.”*

This belief was nevertheless not shared by other participants whom, when probed about potential adverse health impacts of sex on their well-being, said that they don’t believe that is the case.

Thus, instead of being a pleasurable act, sex was perceived by few as an activity that could be potentially harmful, in the context of illness. Others in the study did not support this finding.

### ***Beliefs about transmission of HIV while on ART***

The majority of participants interviewed said that they believe that HIV could be transmitted while the person is on treatment. Some even went on to discuss about re-infection with a different strain of the virus as well as the possibility for them to be infected with a drug resistant strain. Most said they had gotten the information from health personnel at the ART clinic in the health centers. A 35 year old female participant explained:

*“The medicine will fight the illness but it will not disappear from inside of me, so it will be transmitted.”*

Another participant, a 48 year old male participant, elaborated further:

*“Number one, if I have unprotected sex with a girl who has not started the treatment, there is a chance of transmitting resistant virus. Number two, if I say I am taking the drug and transmit it to the others, then the virus will not be prevented, right? Today the run is to prevent the disease, right? If I continue to have sex, then generations will die. We want the virus to stop where it’s at.”*

Two participants said that they don’t know whether there is possibility of transmission of HIV or not when one is receiving treatment for HIV. One of them, a 43 year old male participant said:

*“I don’t know. Is that possible? I am not sure about this. The virus becomes weak when you get treatment. Maybe it is not easy to transmit?”*

The other participant, a 30 year old female, said:

*“My friends told me that I can’t transmit it. I am not sure but I think transmission is lower, mainly if your CD4 is more than 800.”*

Only one participant in the study, a 30 year old male participant, believed that it is not possible to transmit the illness when one is on treatment.

The findings thus indicate that there is a high knowledge about the transmission of HIV when one is on treatment, a knowledge that many had gotten from health workers at the ART clinics. This is despite the fact that there was diversity in the level of education among participants, with over a third of participants having only primary education or below.

### ***Perceived impact of ART on sexual drive***

Participants gave mixed results when asked about how ART has influenced their sexual drive. While most said that ART has had no impact on their sexual drive, few replied that they have had an increased sexual drive since initiation of treatment. A 36 year old male participant, who had been paralyzed for some time and had regained some movement/function after initiation of treatment, said:

*“I want to have it (sex) more nowadays. I need more. I am more careful now, and I use condoms all the time.”*

Another participant, a 42 year old male, similarly stated:

*“I don’t know how to tell you, but my interest has increased. When I’m sleeping, it comes out a lot. The medications have returned my health. I feel very strong and even my job is hard work but I don’t feel anything.”*

Two participants reported having a decreased sexual interest after initiation of treatment, and one asked about what it was in the treatment that was making him feel that way:

*“I used to like sex a lot. I had many partners in the past. These days, the drug is making me lose interest. I don’t want to do it. I don’t understand what it is. Can you tell me why it is happening like that?”*

The findings of this study thus do not provide strong support to the hypothesis that sexual drive/interest is likely to increase in patients who have been initiated on treatment because of gains in health. Most participants in this study did not report any change in their drive, and few had either increased or decreased drive.

### ***Experiences with safe sex***

When asked about what is meant by practicing safe sex, the majority of participants replied that it means using condoms during sexual intercourse. Few participants replied that they are not sure about what is meant by safe sex. A 24 year old female participant said:

*“Participant: Hmmm...I think it means to be cautious, meaning... to be cautious, that is it, not to transmit to others.*

*Researcher: How can you do that?*

*Participant: Hmmm...you can use protection. That is by using condoms.”*

When asked about their actual experiences with safe sex before initiation of treatment, most participants in the study replied that they have never had protected sexual intercourse in their life. Several reasons were cited by participants for not engaging in safe sexual practices. Some mentioned that they simply do not like using condoms, because it feels unnatural. A 43 year old male participant explained:

*Participant: I don’t want condom. I don’t like it. I would rather not have sex than have sex with condom.*

*Researcher: Have you ever used a condom before?*

*Participant: No, never.*

*Researcher: Why is that?*

*Participant: It is not the normal way of doing it, that is it.”*

Three participants mentioned religious grounds as a reason for not using condoms in their case. A 36 year old female participant, who became a Jehovah Witness after being diagnosed with HIV, explained:

*“I am a Jehovah Witness and my religion does not allow it. I have to wait until I get married. I have for now been unable to find a husband with my status. You can only do it with your husband. Besides, condom can break during rough sex. Then you can infect.”*

A similar story was told by a 31 year old female widow who is a follower of the Protestant religion.

*“My religion is everything to me. It is what I have left. God is what gives me my strengths in the hard labor job that I do...I feel good all the time. I have never used condoms. It is a sin.”*

For others, including those giving a history of multiple sexual partnerships, the reason for not using condoms is the belief that it decreases sexual satisfaction. A 30 year old male participant highlights his dislike for condoms as follows:

*“I don’t like to use condoms. You don’t feel anything (laughing)...it is like eating a candy with the plastic still on it.”*

Others mentioned that they have only been in long term relationships in their lifetime and thus have not had the need to use condoms. A 40 year old female participant said:

*“I don’t like to go here and there. I was with my kids’ father for many years, even though we are separated now. We have never used condom.”*

Only few participants in the study stated that they have used condoms on a regular basis before initiation of treatment.

Findings indicate the low experience of safe sex of participants prior to initiation of treatment. Different reasons were given for not engaging in protected sex among these participants.



## ***Sexual experiences after ART initiation***

Participants were asked about the impact of ART on their wellbeing; and their sexual practices after initiation of treatment were then explored; they were also asked to compare their sexual behavior before and after initiation of treatment. The number of sexual partners before and after treatment was also enquired and the interview was concluded by asking participants when their last sexual encounter was and if it was protected or not. Some inconsistencies in the replies were found among few participants while going through these questions and this will later be exemplified by a case study.

All participants reported a positive impact of ART on their overall health. Replying to the question about their sexual practices after initiation of treatment, most of the participants in the study reported that they were abstaining from sex. Several reasons were given, most not related to the treatment per se. One of the reasons for abstaining cited by participants was a devotion that participants had for their religion. Some of these participants stated that they will wait until they meet a person with similar HIV status to get in long term relationships. A 36 year old female participant explained:

*“I know that one day God will give me my partner until the end. Everything in life is written. God knows what he has for me. What is incurable today will be curable tomorrow... only he can decide.”*

Another reason mentioned by few participants was the perception of sex as a laborious act which could offset the health gains related to ART. A 20 year old female participant said:

*“I am more worried about my health, I don’t want to worn out myself. I don’t want nothing.”*

Others mentioned responsibility of preventing the virus from spreading as a reason for staying away from sexual activities. A 45 year old male participant said:

*“I have seen everything in my life and this disease is the worst thing that can happen to a human. I cannot continue to do it....to accomplish what? They are always teaching on radio and TV everyday about stopping the virus and if we can’t stop, how can it stop?”*

One participant, a 33 year old female, said that she had decided not to ever have sex because of deep mistrust of men, after the husband she trusted gave her this illness.

Few of the participants who said that they continued to be sexually active said that they have occasional sex which is protected.

Only one participant said that he continued to have unprotected sex with his partner.

There was thus a high rate of reported abstinence among participants in this study after the initiation of ART. Several reasons were given for this, trying to protect others from being infected being only one of them. The few who continued to be sexually active were engaging in protected sex, one person being the exception.

### ***Case report***

Two case reports are presented below. These case reports are presented to illustrate the challenges that discussing sexual behavior poses in the set up where the study was conducted (first case study); but to also show that few participants are open to discussion of intimate aspects of sexual behavior (second case study).

#### **Case 1**

The following case illustrates what seemed to be a common finding among some of the participants, which is contradictory stories regarding sexual behavior during the course of the interview.

The participant is a 32 year old female, who makes her living working as a cleaning lady at a private firm. She says, “She has been dragged to the 10<sup>th</sup> grade” but doesn’t remember much about her education at this point except for reading and/or writing. Lives with her 15 years old daughter who is of tremendous help to her in her daily life. Her diagnosis of HIV in 2003 was such devastating news that she believes has made her lose weight and become sick. She was initiated on ART in 2007. When asked about the impact of HIV on her life in general, she says that it has made her feel healthy and “normal”.

*“I take it on time and I don’t have any problems at all. I don’t have any kind of discomfort. We wouldn’t have been here if it weren’t for the drugs”* she adds.

When asked about her past sexual experiences/behavior, she talked about a couple of individuals she was having a relationship with. She describes her relationships as a three-way relationship.

*“I was going with two guys. When I have a fight with one, I will go to the other one. And when I have fight with this one, I go back to the other one (laughing). I was all confused. I don’t know which one gave me. I don’t know where they are now. And I didn’t bother to go back and look for them.”*

She says she has not had any sexual contacts since her diagnosis. But she mentions about a person who has been making some sexual advances at her.

**Researcher:** *Have you had sex since you started treatment?*

**Participant:** *NO, but I have this person in my neighborhood who makes me uncomfortable ...it is because I have some grievances inside me. He keeps on nagging me “til when?” I keep telling him it is because I’m going to church and that I don’t want it...and this is my problem.*

When probed further (towards the end of the interview), she reveals to have had a sexual relation with the person she described as making her uncomfortable.

**Researcher:** *When was the last time you had sex? And did you use a condom?*

**Participant:** *Yeah, only with a condom...I don’t know...*

**Researcher:** *Has it been a while?*

**Participant:** *Yes, it has.*

**Researcher:** *Did you use a condom?*

**Participant:** *Yes, I did.*

**Researcher:** *Did this happen after you found out?*

**Participant:** *Yes, it’s after I found out.*

**Researcher:** *You have done it with a condom?*

**Participant:** *There was a guy bothering me, I meant to a point where I felt like my*

*head was exploding....it is because I'm not happy with myself.*

**Researcher:** *Is this the story you told me about a guy at your workplace?*

**Participant:** *Yes. All the good things he was doing for me made me feel indebted...he is a lot older than me...in his head he thought he found a young lady...if I happen to infect them; it would not be good at his age...I missed two days from work.*

**Researcher:** *So you only did it once?*

**Participant:** *It was only once and it didn't even last a minute. I was disgusted!*

The above participant illustrated how challenging it is to talk openly about one's sexual experience in an Ethiopian context (as might also be the case in other set ups). The findings in this research should be considered in light of this fact.

## **Case 2**

A 30 year old male participant who said he had both female and male sexual partners in the past was very open to talk about his sexual life unlike most other participants. His interview was found to be very candid and one that showed the possibility that even topics considered taboo by many could be discussed freely and openly.

He was diagnosed with the virus 5 years ago and was initiated on treatment 3 years after that. He describes his life as healthy and full of pleasure. He credits HIV for making his life take the right path. He currently has a steady girlfriend. He says he uses condoms when necessary.

*"I look at HIV from another side. I'm happy with it...very happy with it. Before I was going in different places and the diagnosis made me extremely careful. I live a very happy life. The only time that I know I have it is when I come here (health center). I live with my sister and my sister has a child and I am very careful for her. I am happy with my life. I have a girlfriend and we use condom when it is necessary."*

When he was asked to elaborate on what he meant by using condoms when necessary, he made the distinction by stating the level of intimacy as a determining factor whether a condom was necessary.

*“I know you can’t get infected by “suck”. Like I told you my girlfriend is also positive...I would rather not have it than to have it with condom.”*

When he was asked about the level of openness (disclosure), he stated he was only open to his sister and few other close friends who have similar HIV status. He continued to explain that disclosing his HIV status, will lead to direct as well as indirect discrimination by members of the society.

On the question of whether ART has affected his sexual life (behavior), he responded by saying that his sexual drive has gone up and he is feeling great about his health and his body.

*“I have never had any problem (side effects) from the treatment and I like the way I feel about myself. My health is full and my sexual interest is high. I am very careful about protecting others. I don’t let HIV drag me down and I don’t let it influence my sex life.”*

### ***Perspectives of health workers***

In the following sections, the perspectives from health workers will be presented and how these relate to what was stated by participants (patients) will be pointed out.

### **Communication about sexual behavior**

All health workers in the study described what many called “secrecy” from the side of their patients when it comes to discussing sexual behavior. All agreed that sexual behavior is not something that patients discuss freely in their health centers. A male health worker said:

*“As you know, it’s very hard to be open about your sex life. They are very secretive of it. And, you can’t force people to tell you what they do in private. We haven’t grown as a society to reach that level. But once in a while you find those who are a bit more open about it. They ask questions even to match them with others in this health center.”*

Two female nurses mentioned that communication with female patients regarding sexual behavior was better than communication with male patients. While one of them said that she herself had difficulty raising the issue of sexual behavior with her male patients, the other

indicated that it was male patients who were reluctant to talk to her about their sexual life while females were more open about it.

*“It’s usually the women that I talk to about their sexual experiences, the men not that much. The men are private. It’s hard to talk to them. The women feel comfortable with us and sometimes they talk about their private life with us and even about their sexual life.”*

Some health workers also reported that at times, they have come across patients who have had conflicting stories about their sexual behavior. Two examples of such conflicting stories were given. A female nurse explained the story of one of her patients, who was giving a story of abstinence from sex:

*“There was this girl who came here crying and I asked her why she was crying and she told me that the NGO that was helping her with things stopped helping her. I asked her why and she told me it was because she was at work when they came home looking for her. I called a guy I knew at the NGO and he told me that they had been following her and they saw her prostituting on the streets and that’s why they stopped helping her.”*

Another nurse also told a story about her client who was claiming that she was having protected sexual intercourse with her boyfriend but who eventually confessed to having engaged in unprotected sex after she broke up with him and became emotional about it.

*“She was telling us that she was using condom but finally when they separated she confessed to us saying ‘I was having unprotected sex with him because he didn’t want to use condom’. Sometimes it’s hard to tell when people are telling the truth.”*

Few health professionals also mentioned that addressing sexual behavior has the potential of making patients uneasy. A male nurse said:

*“We always tell them to use condoms if they are sexually active. We don’t want to make them uncomfortable by asking directly whether they are having sex or not. We just give them the information they need to have.”*

Findings highlight the complicated nature of communication between patients and health workers about matters related to sexual behavior, according to health workers. This was a

belief shared by all health professionals. It appears that some health workers look at patients' accounts of their sexual behavior with some suspicion, since they believe that there is some secrecy from the side of some patients, and others had experienced that patients gave incorrect accounts of their sexual behavior in the past.

### **Health workers' experiences of patients' sexual behavior**

Although there wasn't much openness about the issue of sexual behavior with their clients(patients), health workers nevertheless reported that most of their patients were giving them a history of abstinence from sex, due to several reasons, including wanting to focus more on their health. A health officer said:

*"...but they say they don't have the urge for sexual intercourse. I have come across many who say they lost their interest, I ask them...uhh at this time in their life I haven't found many who have interest for sex. And for example, those who don't have marriage at the moment when we ask them, they say 'Enough! Enough!' "*

Four health workers reported that their clients had asked them to introduce them to other HIV positive patients in their clinics, in order to establish a long term relationship. A nurse said:

*"Sometimes you find those who want us to find them a marriage partner. They tell us they want to get married and have children. Since their health has gotten better they want to do what everybody else wants to do. They are realizing that they can continue to live on without problem. This is the kind of change we have noticed about our clients and it's good to see that."*

Health workers reinforced the accounts of participants on treatment with regards to reports of abstinence and a need for long term relationships by some of their patients.

### **Health workers' experiences with changes in sexual behavior after ART initiation**

Health workers were also asked about experiences of changes in sexual behavior among their clients after ART initiation. Most health workers replied that it's difficult to assess that without having prior knowledge about their clients' sexual behavior but added that their occasional information from their clients suggests that they are abstaining from sex or practicing safe sex. A female nurse said:

*“They don’t tell you much. But when they do, they tell you that they are abstaining. They don’t tell you anything different after they start treatment. It is usually, ‘I am not doing it’.”*

When asked about their experiences with reported sexually transmitted diseases (STD) and any differences in these reports before and after ART initiation, most replied that it is infrequent for them to get reports of STDs and that they haven’t noted any significant difference in clients initiated on ART versus those not initiated on ART. A male nurse said:

*“It is rare. We do symptomatic treatment. But it is not common. They will only come with such complaints once in a while. What we usually see is tricho (trichomoniasis), and it is not always related to being sexually active. It could be because of lack of hygiene.”*

Despite finding it difficult to draw conclusions due to lack of information concerning prior sexual history of their patients, health workers noted that it was not their experience that patients changed their sexual behavior after ART initiation, and indicated that most give a history of abstinence, which appears to be in line with participants’ accounts.

### **Sex education provided at the health centers**

Health workers reported that they try to communicate messages regarding safe sex, use of condoms every time the patients come for treatment. It was also reported that condoms are dispensed at the health facilities whenever available. A health officer said:

*“As you may have seen outside we have a condom dispensing box...I know it doesn’t always have condoms but we try our best to supply it whenever we have it. We try to remind them to use it.”*

When asked about whether they informed the patients about possibility of transmission after ART initiation, all health workers explained that it is part of the sex education that it provided in the health centers.

Health workers also indicated that they also use expert patients to teach their clients about sex, dual protection of condoms, and other matters of interest to their clients such as coping with their illness.



*“We have expert patients as well as healthcare professionals providing health education for our patients here every morning. And it has shown to be fruitful”*

These findings indicate that sex education is provided at the health centers where provision of condoms is also done, although resource constraints made it difficult to make condoms available on a regular basis.

## CHAPTER FOUR: Discussion

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The major aim of the present study was to explore how ART influences the sexual behavior of people living with HIV receiving treatment in Addis Ababa, Ethiopia. The specific objectives were to: explore lay beliefs about transmission of HIV while on ART among people living with HIV (PLHA) receiving ART; explore experiences with safe sex among these PLHA; explore the impact of ART on the sexual experience of these PLHA; explore how the sexual behavior of these patients was influenced by the initiation of ART, and explore health professionals' experiences of how ART use influences HIV patients' sexual behavior.

### ***Lay beliefs about modes of HIV transmission***

The findings of this study suggest a high degree of knowledge about the sexual transmission of HIV; most participants also mentioned transmission through sharp blood containing objects. This finding is interesting because other etiologies of illness such as divine power, cold, curse etc have previously been largely described for many other illnesses in an Ethiopian context. Such beliefs, among other things, lead people to revert to treatments such as religious healing and traditional medicine (52).

The high knowledge about transmission of HIV might be due to the relentless efforts that are in place to get information out to the community in the fight against the illness. Media played an important role in educating and raising awareness about HIV/AIDS. Treatment facilities and NGOs also played a critical role. The study is conducted in an urban setting where access to information including media access is high, and where efforts to educate about HIV have been the highest, in particular at the beginning of the epidemics. Previous studies from Ethiopia have documented these findings. In a study conducted in Gambella, Western Ethiopia, it was found that a high proportion of interviewed participants knew about the modes of transmission of HIV and around 82% reported that they got the information from the media (53). On the other hand, a study conducted among high risk groups for HIV showed a low knowledge about HIV transmission among participants (54).

The implications of this high knowledge can be numerous. One assertion could be that infected persons would revert to biomedical treatment versus other treatments. This knowledge is also necessary in efforts to prevent transmission of the illness. A review looking at factors influencing sexual risk taking among patients living with HIV showed that a lack of knowledge about HIV transmission was one of the factors associated with sexual risk taking (55).

### ***Disclosure of HIV status***

Selective disclosure of HIV status was common in this study, with the majority of participants only disclosing their status to selected persons and with few even hiding their status from intimate partners. The major reason for this selective disclosure was fear of discrimination. HIV related discrimination and stigma have long been acknowledged and constitute one of the major challenges for both patients as well as health professionals working to combat HIV related discrimination and stigma. Studies have previously reported on the extensive stigmatization that occurs on patients in an Ethiopian context (56, 57). Studies looking at disclosure of HIV status indicated that a small proportion of patients do not disclose their HIV status to intimate partners for fear of negative reactions from the side of the partner (58,59).

At the beginning of the epidemics, the government was using scary tactics to address the seriousness of HIV and ways of preventing the spread, which led people to have a negative image of the disease and the people who are infected with the virus. It wasn't unusual to come across advertisements about HIV which portrayed the illness as a death sentence and those infected as hopeless and waiting for death. This might have aggravated the stigma related to the illness in addition to the lack of treatment at the time. But, despite the existence of treatment, stigma and discrimination seem to be persisting, at least perceived by patients. What is most concerning in terms of spread of the illness is non disclosure to sexual partners, which, although not common, is existent. There is a need to focus on mutual disclosure of HIV status in counseling efforts at the treatment facilities, by encouraging patients to disclose their status and also ask the status of their partners (58, 59).

### ***Sex and its perceived adverse impacts on health***

A finding in this study which was novel in terms of reasons for abstaining from sex was a belief that sex can potentially have an adverse impact on health. This belief was shared by some participants, who thought that having sex would compromise the gains in health they have managed to get. This belief in the potential adverse impacts of sex was independent from the fear of transmission of HIV per se, for example from being re-infected by different strains of the virus etc. A study in Addis Ababa looking at patients with TB showed that sex was perceived as a harmful action, with patients believing that its avoidance is important to avoid restart of the illness, and with having sex believed to interfere with treatment and some patients even believing that sex can result in death of ill persons (60). Therefore, there appears to be a local belief which portrays sex as a harmful/laborious behavior for patients who have some illness. This is a belief which appears to be context specific and not largely described in the literature as a reason not to engage in sexual practices. This belief needs to be addressed by health professionals in the health centers who need to clarify the impacts of sex on health.

### ***Beliefs about transmission of HIV while on ART***

In this study, the majority of participants knew that there is a possibility of transmission of HIV while one is on ART. Few said that risk would be lower when CD4 levels got higher, but others said that the risk is there even if one is on treatment. One of the hypothesis put forward with regard to the issue of behavioral disinhibition was the fact that patients receiving treatment for HIV might believe that they are no longer infectious and subsequently would engage in risky sexual behaviors (24,25, 28), but there was no evidence of this in this study.

For most participants, the information had come from health workers at the treatment facilities. There are concerted efforts at educating patients, including about transmission of the illness, which appear to have been successful in terms of raising awareness among patients. A high knowledge about modes of transmission of the illness combined with an adequate knowledge about persistence of risk of infectiousness despite treatment noted among these patients is encouraging because, if combined with knowledge about safe sex and willingness to do so, it would facilitate prevention of transmission of the illness. There is a need for the education in the health centers to be continued.

### ***Perceived impact of ART on sexual drive***

Mixed results were obtained with regards to perceived impact of HIV treatment on sexual drive. While most participants perceived no change, few had either increased or decreased sexual drives. While it has been proposed that ART, through its improvements in physical health and well being, might be followed by an increase in sexual desire and sexual activity, including unsafe sex (24, 25, 28), participants in this study did not have accounts which support this hypothesis, except for few who reported increased sexual drive. This is despite most patients having been on treatment on the average for 2 years. There might be several explanations for why there was limited report of change on sexual drive despite receiving treatment and despite most patients reporting a positive impact of ART on their wellbeing. One of the reasons might be cultural, since participants might find it difficult to talk about sexual drive and in particular an increase in sexual drive. Another reason could be that, despite having benefited physically from the treatment and having a sense of physical well being, patients might still experience adverse psychological impacts of the illness, such as the stigma and discrimination that most of them referred to. Few participants also referred to severe financial constraints that they were experiencing which can lead to stress, which can in turn result to decreased desire despite increased well being. It is also worth noting that some ART drugs are reported to decrease sexual drive on patients taking them, in particular since the drugs used in Ethiopia are old generation drugs which have such side effects, for example Stavudine.

### ***Experiences with safe sex***

In this study, a significant proportion of participants had not experienced safe sex before. Several reasons were given for this, including religious beliefs, condoms not being natural and condoms decreasing sexual pleasure. For others, the reason for not engaging in protected sex was related to the fact that they were involved in long term relationships including marriage where they felt there is no need for using condoms. These patients also reported a lack of intention for engaging in safe sex.

The reasons cited by these participants for not engaging in safe sex have previously been described in the literature. A review study has previously indicated that decreased sexual pleasure with condom use and a lack of intention for engaging in safe sex are associated with

higher risk of engaging in risky sexual behavior (55). The relationship between religion and decreased condom use has also been documented (61).

This low experience with safe sex among patients is a cause for concern. Patients have opted for unsafe sex in the past, which might have been despite adequate knowledge about modes of transmission, although for some, this knowledge might have been acquired through repeated exposure to health facilities and health education provided at these health facilities. Although there is still a need to educate patients about the basics of transmission, more focus should be put on helping them translate their knowledge into practices of safe sex through adequate counseling. While some of the factors mentioned by participants as reasons for not practicing safe sex are hard to tackle, for instance patients' religious beliefs, others are more amenable to change and thus health workers need to be aware of this fact and address the matter.

Few participants nevertheless reported engaging in safe sex and such patients should be encouraged and the provision of condoms at the health facilities is also important because it alleviates the problem of cost and availability, in addition to making access easier to patients who might find it difficult to buy condoms from other places.

### ***Sexual experiences after ART initiation***

Most of the participants in this study replied that they are abstaining from sex when asked about their sexual experience after ART initiation. No patient reported having changed his/her sexual behavior into a more active sexual life or into a more risky sexual behavior. Although it was hypothesized at the beginning of the study that initiation of ART might adversely impact on sexual behavior and several hypothesis for as to why this might happen put forward, participants in this study did not have accounts that supported any of these hypotheses. Instead, what has been reported among these patients is a high degree of abstinence. A review paper documented similar findings among HIV patients in other developing countries (25).

The few participants who said that they continued to have sex said that they had protected sex, one participant being the exception. Previous studies have given conflicting accounts when it comes to engaging in safe sex or not among patients receiving treatment. While some reported an increase in safe sexual behavior after the initiation of ART (28, 33), others found the opposite (32, 34-38), with increases in unsafe sexual practices.

This suggests that patients have their own rationalization when it comes to engaging in sexual behavior, risky or not. Treatment optimism and behavioral disinhibition, as described in the literature, were not described by participants in this study.

It is also important to note, as it was earlier attempted to illustrate with a case study, that some accounts might be biased since discussion of sexual matters is very sensitive, in particular in an Ethiopian context, as will later be discussed.

Interviews with health workers regarding patients' sexual behavior after initiation of ART also showed that health workers were getting histories of abstinence from their patients. Although difficulties discussing this sensitive topic and not knowing their patients' prior sexual history adequately made it difficult for them to assess changes after the initiation of ART, no health worker reported changes in sexual behavior, as was hypothesized. Reports of STDs, which might be an indirect evidence for patients' sexual activity, had also not changed and were reported to be infrequent, both before and after initiation of treatment. Some studies had reported an increase in the number of reports of STDs among patients initiated on treatment (62, 63), although that could have been because of higher rate of diagnosis due to repeated visits at health facilities. Therefore, although the absence of an increase in reported STDs suggests that it is possible that change in sexual activity might have not occurred, a reported increase in STDs wouldn't necessarily mean that this is a genuine increase, but could be due to better diagnosis.

### ***Patient-health worker communication about sexual behavior***

Health workers in this study reinforced what was reported by interviewed participants regarding their sexual behaviors, namely abstinence from sex and a reported need from patients to engage in long term relationships. But health professionals stressed the difficulty they face in discussing issues of sexual behavior among their patients. Some were suspicious of accounts of sexual behavior that patients provided to them. Some provided examples of conflicting accounts given by patients that strengthened their suspicions that some patients might not be entirely honest about their sexual experiences.

There is a need to train health workers so that they are able to properly address the issue of sexual and reproductive needs and rights of patients with HIV. As much as these patients might have a responsibility of protecting others from being infected, they also have sexual and

reproductive needs and rights and a comprehensive approach should be adopted that is in-line with the laws of the country. In these health centers, no separate unit for sexual and reproductive health issues exists and health workers in the ART clinics are responsible for addressing all issues that patients have. This constitutes a challenge unless health workers are trained both in HIV management as well as sexual and reproductive health management. This also increases the burden that health workers are faced with. These challenges faced by health workers have previously been described in the literature: a study showed that health workers lack the confidence and skills necessary to deliver services within an integrated HIV and sexual/reproductive health system (64). The ongoing practice of using expert patients that PLHAs can identify with could also be used in this regard.

Some health professionals had concluded that discussing sexual matters with patients might make them uncomfortable, which might adversely influence any attempt that they might want to make to discuss the matter with them. Rather than assuming that patients might be made uncomfortable by the discussion of sex, there is a need to find ways to better communicate with patients from the side of health workers which might be possible through the training referred to above.

There also appears to be gender specific preferences to discuss sexual matters with health workers which need to be further explored.

The patient-provider relationship in an Ethiopian context is characterized by an existence of hierarchical relationship, with health workers occupying the high position. Communication could sometimes be unidirectional with patients fearful/shy to ask questions freely. This is also a matter that needs to be addressed but that can take time to change since it involves deep rooted beliefs and values. One of the important aspects of health communication is the fact that the person receiving or conveying information should feel close to the recipient of the information, and believe in his/her trustworthiness (65).

### ***Sex education provided at the health centers***

Health workers in this study reported sex education as being a part of the general education that is provided to patients. They also stated that the health education is given by professional health workers as well as expert patients. Condoms are distributed at all health centers as they are available. Transmission of HIV while on ART is also stressed to the patients.



Health facilities also make use of expert patients for this purpose, which is important since patients are likely to identify with these expert patients. Communication is more accepted when the person receiving information perceives the source to be similar to her/him (65).

The education seems to have been helpful in terms of raising awareness among patients about modes of transmission as well as knowledge about transmission of HIV after ART initiation. But beliefs about sex as a harmful activity when one is ill were found to exist among some participants, and these need to be addressed. Sometimes miscommunications between patients and health workers might happen, in particular if patients are not encouraged to ask questions to issues that they do not understand. Thus, attempts at educating patients might result in patients getting the wrong messages. Effective communication would necessitate simple and clear communications which patients can easily understand.

### ***Implications for practice***

One of the factors inhibiting disclosure among the participants was fear of being discriminated against, including from intimate partners. A lot needs to be done in order to address HIV related stigma and discrimination.

Different channels, in particular the media which is wide reaching, should be used to disseminate information about sexual matters including clarifying the relationship between sexual behavior and health, as well as encouraging the community to discuss matters related to sexual behavior, in particular with health workers.

It was also found that most participants had no experience with safe sex due to several factors. Although there was a high reported abstinence among participants, it is a matter of concern if these participants later engage in sexual contacts which are unprotected. Therefore, health workers need to discuss safe sex with their patients on ART

There is a need to provide further training to health workers to address the issue of sexual behavior with their patients.

### ***Implications for research***

There is a need for further research to explore the issue of sexual behavior among infected and uninfected population, including in other set ups such as rural areas where knowledge as

well as discourses around sexual behavior and safe sex might be different from Addis Ababa, which is a relatively privileged set up in Ethiopia.

It is crucial to address the views of community members at risk of infection.

Research looking deeply into gender based differences in terms of discussing one's sexual behavior/experiences with health workers should be conducted because the results will inform future decisions in terms of selecting who best suits to give counseling to a particular patient.

### ***Strengths and limitations of the study***

The study is, to our knowledge, the first to explore the issue of sexual behavior and sexual risk taking in patients on ART in an Ethiopian context. The study has included the perspectives of both patients and health workers.

Nevertheless, only patients on treatment were included. It would have been interesting to include the perspectives of patients at risk of infection, that is patients with HIV negative status or unknown status. But due to time and resource constraints, this has not been possible.

Although the results are highly repeatable among participants, allowing us to say that there is high internal validity, conducting for instance FGDs among participants in order to further validate the results and for further triangulation would have been ideal, but this was not possible due to the sensitivity of the issue making group discussion difficult.

The results might have been limited by the sensitivity of the matter and possible social desirability bias, and some evidence of it has been found with contradictory findings suggested by the participants. To what extent this influenced the results of the study is difficult to estimate, but the results should be read with this issue in mind.

### ***Methodological considerations***

A total of 28 patients and 10 health workers were included in this study. The study is limited to a single geographical area, an urban setting in Ethiopia. But diversity among participants has been ensured. Therefore, the study can provide some useful reflections on the issue of sexual behavior in the post-ART era, and the results can be extrapolated to other settings, in particular to settings similar to our study setting.

## ***Conclusion***

There was no evidence from this study to suggest an increase in sexual risk taking after the initiation of ART in the study setting. There was a high level of knowledge among participants about HIV transmission including while on ART, which is encouraging but there was a low level of past safe sex practices. The latter should be addressed by health professionals. Difficulties addressing sexual matters with patients reported by health workers also necessitate immediate attention. Misperceptions about sex and health need to be addressed. Community level interventions to combat HIV related discrimination are needed.

## References

1. WHO. Towards Universal Access. Scaling up priority HIV/AIDS interventions in the health sector. Progress report. Geneva, Switzerland. WHO: 2010
2. UNAIDS. UNAIDS Report on the global AIDS epidemic 2010. UNAIDS: 2010
3. WHO/UNAIDS: Report on the global HIV/AIDS epidemic 2008. WHO/UNAIDS: 2008
4. Stover J, Bertozzi S, Gutierrez JP, Walker N, Stanecki KA et al. The global impact of scaling up HIV/AIDS prevention programs in low- and middle-income countries. *Science*. 2006; 311(5766):1474-6
5. Bartlett JA, Shao JF. Successes, challenges, and limitations of current antiretroviral therapy in low-income and middle-income countries. *Lancet Infect Dis*. 2009; 9(10):637-49
6. Federal Democratic Republic of Ethiopia. Federal HIV/AIDS Prevention and Control Office. Report on progress towards implementation of the UN Declaration of Commitment on HIV/AIDS. 2010
7. Macro International Inc. Ethiopia Atlas of Key Demographic and Health Indicators, 2005. Calverton: Macro International. 2008
8. Gebreyesus SH, Haile Mariam D. Assessment of HIV/AIDS-related risks among men having sex with men (MSM) in Addis Ababa, Ethiopia. *Journal of Public Health Policy* Vol. 30, 3, 269–279. 2009
9. USAID. Ethiopia: HIV/AIDS health profile. 2010. Available online at: [http://www.usaid.gov/our\\_work/global\\_health/aids/Countries/africa/ethiopia.pdf](http://www.usaid.gov/our_work/global_health/aids/Countries/africa/ethiopia.pdf)
10. Tadele G. “Boundaries of Sexual Safety”: Men Who Have Sex with Men (MSM) and HIV/AIDS in Addis Ababa. *Journal of HIV/AIDS & Social Services*, 9:261–280. 2010
11. Federal Ministry of Health. Federal HIV/AIDS Prevention and Control Office. Strategic Plan for intensifying Multisectoral HIV and AIDS Response in Ethiopia II (SPM II). 2009 – 2014. 2009.

12. Federal Ministry of Health. Federal HIV/AIDS Prevention and Control Office. Guidelines for HIV Counselling and Testing in Ethiopia. 2007
13. Federal Ministry of Health, Federal HIV/AIDS Prevention and Control Office. Guidelines For implementation of the antiretroviral therapy programme in Ethiopia. Federal Ministry of Health; 2007.
14. Ethiopian Ministry of Health. Annual HIV/AIDS monitoring and evaluation report: 2005/06. Addis Ababa (Ethiopia): Ministry of Health.2007
15. Ethiopian Ministry of Health. Ethiopian monthly antiretroviral treatment report. June 2008. Addis Ababa (Ethiopia): Ministry of Health.2008
16. Federal Ministry of health, National HIV/AIDS Prevention and Control Office. AIDS in Ethiopia sixth report .Addis Ababa: Ministry of Health; 2006
17. Federal Ministry of Health, Federal HIV/AIDS Prevention and Control Office. Monthly HIV Care and ART update; 2010.
18. Tiyou A, Belachew T, Alemseged F, Biadgilign S. Predictors of adherence to antiretroviral therapy among people living with HIV/AIDS in resource-limited setting of Southwest Ethiopia. *AIDS Res Ther.* 2010;7:39.
19. Tadios Y, Davey G. Antiretroviral treatment adherence and its correlates in Addis Ababa, Ethiopia. *Ethiop Med J.* 2006; 44(3):237-44.
20. Federal Ministry of Health, Federal HIV/AIDS Prevention and Control Office. Guidelines for management of opportunistic infections and anti retroviral treatment in adolescents and adults in Ethiopia; 2008
21. De Cock KM, Gilks CF, Lo YR, Guerma T. Can antiretroviral therapy eliminate HIV transmission? *Lancet.* 2009; 373(9657):7-9.
22. Attia S, Egger M, Müller M, Zwahlen M, Low N. Sexual transmission of HIV according to viral load and antiretroviral therapy: systematic review and meta-analysis. *AIDS.* 2009 ; 23 (11):1397-404.

23. Musicco M, Lazzarin A, Nicolosi A, Gasparini M, Costigliola P, Arici C, Saracco A. Antiretroviral treatment of men infected with human immunodeficiency virus type 1 reduces the incidence of heterosexual transmission. Italian Study Group on HIV Heterosexual Transmission. *Arch Intern Med.* 1994; 154(17):1971-6.
24. Dilley JW, Woods WJ, McFarland W. Are advances in treatment changing views about high-risk sex? *N Engl J Med.* 1997; 337(7):501-2.
25. Kennedy C, O'Reilly K, Medley A, Sweat M. The impact of HIV treatment on risk behavior in developing countries: a systematic review. *AIDS Care.* 2007; 19(6):707-20
26. Mocroft A, Vella S, Benfield TL, Chiesi A, Miller V, Gargalianos P, d'Arminio Monforte A, Yust I, Bruun JN, Phillips AN, Lundgren JD. Changing patterns of mortality across Europe in patients infected with HIV-1. EuroSIDA Study Group. *Lancet.* 1998; 352(9142): 1725-30.
27. Palella FJ Jr, Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA, Aschman DJ, Holmberg SD. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med.* 1998 ; 338(13):853-60.
28. Luchters S, Sarna A, Geibel S, Chersich MF, Munyao P et al. Safer sexual behaviors after 12 months of antiretroviral treatment in Mombasa, Kenya: a prospective cohort. *AIDS Patient Care STDS.* 2008; 22(7):587-94
29. Bateganya M, Colfax G, Shafer LA, Kityo C, Mugenyi P, Serwadda D, Mayanja H, Bangsberg D. Antiretroviral therapy and sexual behavior: a comparative study between antiretroviral- naive and -experienced patients at an urban HIV/AIDS care and research center in Kampala, Uganda. *AIDS Patient Care STDS.* 2005;19(11):760-8.
30. Bunnell R, Ekwaru JP, Solberg P, Wamai N, Bikaako-Kajura W, Were W, Coutinho A, Liechty C, Madraa E, Rutherford G, Mermin J. Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda. *AIDS.* 2006 ; 20(1):85-92.
31. Moatti JP, Prudhomme J, Traore DC, Juillet-Amari A, Akribi HA, Msellati P; Côte d'Ivoire HIV Drug Access Initiative Socio-Behavioral Evaluation Group. Access to

antiretroviral treatment and sexual behaviors of HIV-infected patients aware of their serostatus in Côte d'Ivoire. *AIDS*. 2003;17 Suppl 3:S69-77.

32. Diabaté S, Alary M, Koffi CK. Short-term increase in unsafe sexual behavior after initiation of HAART in Côte d'Ivoire. *AIDS*. 2008 ; 22(1):154-6.

33. Crepaz N, Hart TA, Marks G. Highly active antiretroviral therapy and sexual risk behavior: a meta-analytic review. *JAMA*. 2004; 292(2):224-36

34. Wilson TE, Gore ME, Greenblatt R, Cohen M, Minkoff H, Silver S, Robison E, Levine A, Gange SJ. Changes in sexual behavior among HIV-infected women after initiation of HAART. *Am J Public Health*. 2004; 94(7):1141-6.

35. Ostrow DE, Fox KJ, Chmiel JS, Silvestre A, Visscher BR, Venable PA, Jacobson LP, Strathdee SA. Attitudes towards highly active antiretroviral therapy are associated with sexual risk taking among HIV-infected and uninfected homosexual men. *AIDS*. 2002 ;16(5):775-80.

36. Kalichman SC, Eaton L, Cain D, Cherry C, Fuhrel A, Kaufman M, Pope H. Changes in HIV treatment beliefs and sexual risk behaviors among gay and bisexual men, 1997-2005. *Health Psychol*. 2007; 26(5):650-6.

37. Katz MH, Schwarcz SK, Kellogg TA, Klausner JD, Dilley JW, Gibson S, McFarland W. Impact of highly active antiretroviral treatment on HIV seroincidence among men who have sex with men: San Francisco. *Am J Public Health*. 2002; 92(3):388-94.

38. Dukers NH, Goudsmit J, de Wit JB, Prins M, Weverling GJ, Coutinho RA. Sexual risk behavior relates to the virological and immunological improvements during highly active antiretroviral therapy in HIV-1 infection. *AIDS*. 2001;15(3):369-78.

39. UN Data. Ethiopia: Summary Statistics. 2010. Available online at:  
<http://data.un.org/CountryProfile.aspx?crName=Ethiopia#Environment>

40. Central Statistical Agency and ORC Macro. Ethiopia Demographic and Health Survey 2005. Addis Ababa and Calverton, MD: Central Statistical Agency and ORC Macro, 2006

41. CIA. The World Factbook. Africa, Ethiopia: People. 2011. Available online at: <https://www.cia.gov/library/publications/the-world-factbook/geos/et.html>
42. Ethiopian Ministry of Health. Health and health related indicators. Planning and programming department: Addis-Ababa, Ministry of health; 2007
43. Federal Ministry of Health. Health Background: Health Status. Available online at: [http://www.moh.gov.et/index.php?option=com\\_k2&view=item&id=111:health-background](http://www.moh.gov.et/index.php?option=com_k2&view=item&id=111:health-background)
44. CSA (Central Statistical Agency). Population and Housing Census result, Artistic press, Addis Ababa Ethiopia. 2007
45. Addis-Ababa Health Bureau. Strategic plan of Addis-Ababa City Administration Health Bureau 2004-2007. Addis-Ababa: Addis-Ababa Health Bureau. 2007
46. Myers MD, Newman M. The qualitative interview in IS research: Examining the craft. *Information and Organization* 2007; 17: 2–26
47. Kvale S. *Interviews: An Introduction to Qualitative Research Interviewing*. Sage Publications Ltd.; 1996
48. Holstein JA, Gubrium JF. Active Interviewing, in: *Postmodern Interviewing*. Sage Publications Ltd.; 2003
49. Malterud K. Shared understanding of the qualitative research process. *Guidelines for the medical researcher. Fam Pract.* 1993; 10(2):201-6.
50. Finlay L, Gough B. *Reflexivity: A Practical Guide for Researchers in Health and Social Sciences*. 2003. Blackwell Publishing Ltd.
51. The Council for International Organizations in Medical Sciences (CIOMS). *International Ethical Guidelines for Biomedical Research involving Human Subjects*. 2002
52. Bishaw M. Promoting traditional medicine in Ethiopia: a brief historical review of government policy. *Soc Sci Med.* 1991;33(2):193-200.
53. Negash Y, Gebre B, Benti D, Bejiga M. A community based study on knowledge, attitude and practice (KAP) on HIV/AIDS in Gambella town, Western Ethiopia. *Ethiop. J. Health Dev.* 2003; 17(3): 205-213



54. Kassie GM, Mariam DH, Tsui AO. Patterns of knowledge and condom use among population groups: results from the 2005 Ethiopian behavioral surveillance surveys on HIV. *BMC Public Health*. 2008;8:429.
55. Crepaz N, Marks G. Towards an understanding of sexual risk behavior in people living with HIV: a review of social, psychological, and medical findings. *AIDS*. 2002;16(2):135-49.
56. Reilley B, Hiwot ZG, Mesure J: Acceptability and utilization of services for voluntary counseling [corrected] and testing and sexually transmitted infections in Kahsey Abera Hospital, Humera, Tigray, Ethiopia. *Ethiop Med J* 2004, 42:173-7.
57. Aga F, Kylmä J, Nikkonen M: Sociocultural factors influencing HIV/AIDS caregiving in Addis Ababa, Ethiopia. *Nurs Health Sci*. 2009, 11:244-51
58. Deribe K, Woldemichael K, Wondafrash M, Haile A, Amberbir A. Disclosure experience and associated factors among HIV positive men and women clinical service users in Southwest Ethiopia. *BMC Public Health*. 2008;8:81.
59. Gari T, Habte D, Markos E. HIV positive status disclosure among women attending art clinic at Hawassa University Referral Hospital, South Ethiopia. *East Afr J Public Health*. 2010 ;7(1):87-91.
60. Sagbakken M, Frich JC, Bjune GA. Perception and management of tuberculosis symptoms in Addis Ababa, Ethiopia. *Qual Health Res*. 2008;18(10):1356-66.
61. Ku LC, Sonenstein FL, Pleck JH. The association of AIDS education and sex education with sexual behavior and condom use among teenage men. *Fam Plann Perspect*. 1992; 24 (3): 100-6.
62. Sarna A, Luchters SM, Geibel S, Kaai S, Munyao P, Shikely KS, Mandaliya K, van Dam J, Temmerman M. Sexual risk behavior and HAART: a comparative study of HIV-infected persons on HAART and on preventive therapy in Kenya. *Int J STD AIDS*. 2008; 19(2):85-9.
63. Stolte IG, Dukers NH, de Wit JB, Fennema JS, Coutinho RA. Increase in sexually transmitted infections among homosexual men in Amsterdam in relation to HAART. *Sex Transm Infect*. 2001; 77 (3):184-6.

64. Bharat S, Mahendra VS. Meeting the sexual and reproductive health needs of people living with HIV: challenges for health care providers. *Reprod Health Matters*. 2007;15(29 Suppl):93-112.

65. Kreuter MW, McClure SM. The role of culture in health communication. *Annu Rev Public Health* 2004; 25: 439-55

## **ANNEX I: Interview guide for patients**

1. Can you tell me your age, marital status, level of education, and occupation?
2. When did you find out that you have HIV?
3. How has your life been since your diagnosis?
4. How open are you about your HIV status?
5. How long has it been since you started taking treatment?
6. Has ART affected your health status? How so?
7. Do you have a partner?
8. Are you sexually active? Have you had sexual intercourse outside of your partner?
9. Were you sexually active before you started ART?
10. What kind of sexual act do you perform? What is your sexual orientation?
11. What is safe sex?
12. How do you feel about yourself since your initiation on ART, health wise?
13. Has ART affected your sexual life? How so?
14. How many sexual partners have you had in the past?
15. How many are since you found out about your diagnosis?
16. What is your knowledge about transmission of HIV?
17. Is it possible to transmit HIV while on ART? Why/why not?
18. Do you think your sexual practices have changed since your diagnosis?
19. When was the last time you had sex? Was it protected?

## **Annex II: Interview guide for health workers**

1. What have you observed in your clients after they have been initiated on ART?
2. What is the information you have on sexually transmitted diseases reported by your clients?
3. What have you observed in the sexual behavior of your clients who are on ART? If they discuss it with you.
4. What form of education do you give/teach your clients on the modes of transmission of HIV?
5. Which group of people(socio-economic status) are most represented in your health center when it comes to being initiated on ART?
6. What do your clients tell you about their experiences as a patient who is on ART?
7. Where do your clients get help on social and psychological issues related to their illness?
8. What kind of relationship do you have with your clients? On the personal level.
9. Can you tell me from your experience the effect of ART on the sexual behavior of your clients?

## **Annex III: Consent form**

I the undersigned has been informed that the aim of this research to study the effect of HIV treatment on the sexual behavior of the people who are on HIV treatment.

I have been informed that I am going to have discussions with the researcher about issues related to HIV treatment and my sexual experiences and that the discussion might be repeated, if there is a need to clarify issues that might arise from the discussion.

I have also been informed that the information that I give will solely be used for this study and the findings may get published, but that my identity will be treated with confidentiality and my name will not be used in connection with the information that I gave.

I have also been informed that I can refuse to discuss issues that I don't want to discuss and can stop the interview any time I want, and that I will not be obliged to continue to participate in the study or give reasons for doing so.

I have also been informed that I can stop participating any time along the study process and that refusing to participate or withdrawing from the study will not have any consequences on me.

I agree to participate in this research.

Signature -----

Date -----